AN ASSESSMENT OF EFFORTS TO REFORM THE IMPLEMENTATION OF THE CHEMICAL WEAPONS CONVENTION

A Thesis

Presented to the

Faculty of the College of Graduate Studies and Research

Angelo State University

In Partial Fulfillment of the

Requirements for the Degree

MASTER OF SCIENCE

by

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May 2019

Major: Global Security Studies

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ABSTRACT

The Chemical Weapons Convention (CWC) was the culmination of decades of negotiations and compromise. Compromises, changes in the security environment, and the ambitious nature of the CWC as meant that the implementation of the CWC has been uneven. Some objectives, such as chemical weapons disarmament, has been prioritized over other objectives. Weakly enforced objectives, such as non-proliferation and enforcement, have instead been enforced through unilateral means and informal international security arrangements. As the destruction of declared chemical weapons is nearing its completion, the Organization for the Prohibition of Chemical Weapons (OPCW) has realized its need to reprioritize its objectives. This is being informed through practical experiences, a realistic assessment of the organization's capabilities, and the balancing of the needs of individual States Parties. Reforms, and suggested reforms from the OPCW, have mostly been half-measures but include transformations of the OPCW which demonstrate a desire to stay relevant to the norm against chemical weapons.

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CHAPTER 1

INTRODUCTION

1. Chemical Weapons Defined

Article II of the Chemical Weapons Convention (CWC) defines what chemical weapons are. Chemical weapons are made up of three components that can individually or collectively be considered a chemical weapon. Those components are toxic chemicals and their precursors, munitions and devices that use toxic chemicals to cause death or harm, and any equipment specifically designed for use with those munitions and devices.[1]

Toxic chemicals are what one most commonly thinks of as chemical weapons. They are "any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals" according to Article II the convention. [2] A precursor to a toxic chemical is "any chemical reactant which takes part at any stage in the production by whatever method of a toxic chemical" according to Article II of the Convention.[3] Calling precursors chemical weapons is not just necessary for making it harder to produce toxic chemicals, but also for making it harder to stockpile binary or multicomponent chemical weapons. While unitary chemical weapons need to already be a toxic chemical when stockpiled, binary or multicomponent chemical weapons can be

[1] "Article II – Definitions and Criteria." OPCW. https://www.opcw.org/chemical-weapons-convention/articles/article-ii-definitions-and-criteria.
[2] Ibid
[3] Ibid

separated into precursors when stockpiled and combined into a toxic chemical as they are deployed.

Toxic chemicals can generally be divided into three types. In 1915, chocking agents were the first chemical weapons to be developed. They are fast acting and fill the lungs with fluid and irritate the eyes and skin. 80% of chemical weapons fatalities during WW1 were caused by choking agents. An example of a choking agent is chlorine. In 1917, to counter the increased use of gas masks, blister and blood agents were deployed. They were less lethal but more damaging and burned and blistered unprotected skin, eyes, and lungs. Exposure produces no immediate effect within the first few hours but can cause damage for days afterwards. Mustard gas is a blister agent. Just before WW2, German scientists produced nerve agents when attempting to make insecticides. Nerve agents are fast acting and significantly more lethal than choking or blister and blood agents. Nerve agents, like sarin or VX, interfere with the functioning of the nervous system and can have a variety of effects such as making it hard to breathe, producing cardiovascular problems, muscle spasms, excessive secretions, and other life-threatening effects.[4]

Toxic chemicals or precursors are not considered chemical weapons when they are used for purposes not prohibited under the CWC. Not prohibited purposes can include "…Industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes; Protective purposes, namely those purposes directly related to protection against toxic chemicals and to protection against chemical weapons; Military purposes not connected with

[4] "Types of Chemical Weapons " Federation of American Scientists. https://fas.org/programs/bio/chemweapons/cwagents.html.

the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare; and Law enforcement including domestic riot control purposes."[5] These exceptions are necessary due to the common and dual-use nature of chemicals. A practical example of how chemical weapons are largely defined by their use is chlorine. The toxic chemical chlorine would not be considered a chemical weapon when used for cleaning pools but would be considered a chemical weapon when weaponized as a choking agent. This approach to defining chemical weapons allows the CWC to more flexibly respond to the emergence of new toxic chemicals.

The line between peaceful and hostile uses of chemicals is easily blurred. The ongoing debate over how riot control agents should be covered in the convention is a demonstration of this. During negotiations for the chemical weapons convention, the US argued that riot control agents should not be prohibited. It argued that it had too much utility for domestic policing or defensive military operations. Opponents have argued that creating an arbitrary line between what is and is not a chemical weapon would muddy the issue too much and allow for the further development and use of chemical weapons. Riot control agents have been used during warfare. In the Iran-Iraq war, the Iraqi government used riot control agents, which it stockpiled to use against Kurdish revolts, to disrupt Iranian troop formations and drive Iranian troops away from cover and into lines of fire.[6] Prohibiting the "military use" of riot control agents in the convention was a weak compromise.

[5] "Article II – Definitions and Criteria." OPCW. https://www.opcw.org/chemical-weapons-convention/articles/article-ii-definitions-and-criteria.
[6] The Senate Committee on Foreign Relations. *Chemical Weapons Convention: Hearings before the Committee on Foreign Relations, United States Senate, 103rd Congress, 2d Session, March 22, April 13, May 13 and 17, June 9 and 23, 1994*. Washington, D.C.: USGPO., 1994. 36, 98

Riot control agents have had lethal results. In 2003, 40 Checneyan rebels held roughly 1,000 Russians hostage in a Moscow theater. The incapacitating riot control agent used during the rescue attempt contributed to most of the 130 hostage deaths.[7] Concerns over the continued research and development of incapacitating riot control agents has led experts to call for a review of how riot control agents are defined and regulated under the convention in the post-destruction era.[8]

2. Contemporary Chemical Weapons Use

In 1995, the Aum Shinrikyo cult deployed sarin, which it had produced, on a subway in Tokyo. It resulted in 12 deaths and thousands of injuries. It would have been far more fatal if Aum Shinrikyo had better perfected its delivery mechanism. This was a watershed moment for chemical terrorism. Technology had reduced the barrier to chemical weapons production and Aum Shinrikyo demonstrated that terrorists could have the means and organization to pass that barrier.[9]

Between 2014 and 2017, the Islamic State (IS) carried out at least 76 chemical weapons attacks in Iraq and Syria using chlorine and mustard gas. They were also the first terrorist organization to have developed the capability of deploying toxic chemicals through a projectile system. While IS was Al-Qaeda in Iraq, and even before then, it had pursued

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Ali, Javed. "Chemical Weapons in the Iran-Iraq War: A Case Study in Non-Compliance." *The Non-Proliferation Review*, Spring (2001). 47

[7] Krechetnikov, Artem. "Moscow Theatre Siege: Questions Remain Unanswered." BBC News. October 24, 2012. https://www.bbc.com/news/world-europe-20067384.

[8] Crowley, Michael, and Malcom Dando. "The Incapacitating Chemical Agents Loophole." Bulletin of the Atomic Scientists. June 28, 2018. https://thebulletin.org/2014/10/the-incapacitating-chemical-agents-loophole/.

[9] Lindsay, James. "Lessons Learned: Tokyo Sarin Gas Attack." Council on Foreign Relations. March 20, 2012. https://www.cfr.org/explainer-video/lessons-learned-tokyo-sarin-gas-attack.

chemical weapons. In Iraq, between 2006 and 2007, the group had carried out chemical improvised explosive device (IED) and VBIEDs (Vehicle-borne IED) chemical attacks. According to Columb Strack, these attacks were not any more effective than regular explosives but they evoked a political reaction from the US who worked to disrupt the group's chemical operations.[10]

In 2014, IS captured Mosul. The presence of laboratories in Mosul allowed IS to pursue a rudimentary chemical weapons program. IS had the expertise to use these laboratories from foreigners with skills in chemistry, jihadists with previous research experience in chemical weapons production, and Iraqis who were technical experts or even had experience working on Saddam Hussein's chemical weapons program. IS used chemical weapons against Iraqi forces and Kurdish forces in Iraq as well as against Kuridsh forces in Syria. It deployed toxic chemicals initially through IEDs and VBIEDS before learning how to deploy them using mortars and rockets. While politically significant, the attacks had little strategic or tactical advantage compared to conventional or other unconventional means according to Columb Strack.[11] Robert Bunkers states that IS's technical limitations, such as low-grade chemical weapons and the limited range of its delivery mechanisms, prevented them from having any tactical and strategic significance in battlefield use.[12]

IS lost its chemical weapons capabilities with its expulsion from Mosul and the targeting of its chemical weapons network by US, Kurdish, and Iraqi forces. It retains its knowledge of

[10] Strack, Columb. "The Evolution of the Islamic State's Chemical Weapons Efforts." *CTC Sentinel* 10, no. 9, October 2017.

[11] Ibid

[12] Bunker, Robert J. *Contemporary Chemical Weapons Use In Syria and Iraq by the Assad Regime and The Islamic State*. Carlisle, PA: US Army War College, 2019. 35-36

toxic chemical production and it has tried to encourage radicalized individuals to carryout chemical attacks in the West, such as contaminating food at grocery stores, using common toxic chemicals. Columb Strack states, however, that radicalized individuals have preferred means which ensure their deaths during attacks such as armed attacks used in combination with fake suicide belts. [13]

In 2012, the Syrian government first deployed chemical weapons against civilians in Homs. Between 2012 and 2018, the Syrian government carried out extensive chemical weapons attacks using chlorine and sarin. It primarily targeted civilians. The Global Public Policy Institute conducted a study of the logic behind the Syrian government's use of chemical weapons during the civil war. Strategically, the GPPI states that the Syrian government's use of indiscriminate violence against civilians in rebel held territories, which the Syrian government had been besieging, was designed to reduce civilian support for rebels in those territories. Tactically, the GPPI stated that chemical weapons like chlorine had the ability to sink into underground civilian shelters and had a strong psychological impact. Chemical weapons were effective because of their tactical value and because of the demoralizing impact of a lack of an international response to the breach of the chemical weapons taboo. Factors which contributed to civilians leaving rebel territories or pressuring rebels to pursue a political settlement.[14] While chemical weapons have limited utility in military to military engagements, their use by the Syrain government against civilians demonstrates their continued effectiveness as a weapon of terror.

[13] Strack, Columb. "The Evolution of the Islamic State's Chemical Weapons Efforts." *CTC Sentinel* 10, no. 9, October 2017.
[14] Schneider, Robert, and Theresa Lütkefend. *Nowhere to Hide: The Logic of Chemical Weapons Use in Syria*. Berlin: Global Public Policy Institute, 2019. 13-14, 26-27, 31

Chemical weapons were designed to inflict mass casualties but have been used as a weapon for assassination. In 2017, North Korean agents killed Kim Jung Nam, the half-brother of North Korean leader Kim Jung Un, using the VX nerve agent. In 2018, a former Russian spy who had acted as a double agent for the UK, Sergei Skripal, and his daughter were nearly killed in a failed assassination attempt, carried out by Russian GRU agents, using the Novichok nerve agent.

The value of chemical weapons in assassination can be symbolic. This was particularly demonstrated in Salisbury. Novichok is an advanced and uniquely Russian chemical weapon. Russia has assassinated many dissidents around the world. While many Russian assassinations have limited coverage, some appear to have the aim of attracting international attention. In 2006, a former FSB officer living in in asylum in the UK, Alexander Litvinenko, was assassinated using polonium. The use of Novichok was another assassination that drew international attention due to its unusual nature and its clear link to Russian government. These assassinations are designed to intimidate dissenters and potential dissenters by demonstrating the reach and impunity of the Russian government.

3. The Norm against Chemical Weapons and the CWC

The earliest bilateral agreement limiting the use of poisons in war was the 1675 Strasbourg Agreement between France and Germany. The 1899 Hague Declaration was the first multilateral treaty restricting the use of poison weapons and asphyxiating or deleterious gases. The use of gases in warfare had been theorized about but not yet developed by that point. It would not be until WW1 that the norm against poisoned weapons and norm against

asphyxiating or deleterious gases would be merged into a single norm against chemical weapons according to Catherine Jefferson.[15]

Milos Vee notes that the use of chemical weapons during WW1 was already illegal. He states that what little focus there was on the legality of chemical weapons was politicized as Germany falsely claimed that it acted in retaliation to French chemical weapons use.[16] While prior to WW1 there was debate as to if chemical warfare was a more humane form of warfare, by proponents such as Alfred Mahan, by the end of WW1, the long term psychological and physical trauma caused by chemical weapons helped generate a strong public reaction against their use. [17]

Milos Vee states that the 1925 Protocol for the Prohibition of the Use in War of Asphyxiating, poisonous or other gases, and of Bacteriological Methods of Warfare did little to improve upon the 1899 Hague Declaration. He argues that its main purpose was to reinforce the 1899 Hague Declaration.[18] The 1925 Geneva Protocol had many flaws. One flaw was that it was unclear if it only prohibited chemical weapons use in international conflict or if the law extended the prohibition into domestic conflict. Another flaw was that states were also allowed to make reservations to parts of the treaty. These reservations allowed for the use of chemical weapons against non-party states and allowed for the use of chemical weapons in retaliation to a chemical weapons attack. The Protocol also did not

[15] Jefferson, Catherine. 2014. "Origins of the Norm against Chemical Weapons." International Affairs 90 (3): 649-656
[16] Milos Vee, "Challenging the Laws of War by Technology, Blazing Nationalism and Militarism: Debating Chemical Warfare Before and After Ypres, 1899-1925" In *One Hundred Years of Chemical Warfare: Research, Deployment, Consequences*. Berlin: Springer, 2017. 112, 122-123

[17] Jefferson, Catherine. 2014. "Origins of the Norm against Chemical Weapons." International Affairs 90 (3): 649-656
[18] Milos Vee, "Challenging the Laws of War by Technology, Blazing Nationalism and Militarism: Debating Chemcial Warfare Before and After Ypres, 1899-1925" In *One Hundred Years of Chemical Warfare: Research, Deployment, Consequences*. Berlin: Springer, 2017. 128

adequately define chemical weapons leading to intense debate about the US's use of herbicides in Vietnam.[19]

In 1997, the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, or Chemical Weapons Convention for short, came into effect. Several factors contributed to international agreement on the need for a total and verifiable prohibition on chemical weapons. Continued chemical weapons use after 1925 reinforced the perception of chemical weapons as indiscriminate and horrific compared to other weapons and existing international law as weak. Exceptions to chemical weapons use in the 1925 Geneva Protocol were no longer seen as necessary in 1997. Chemical weapons were determined to be not strategically valuable for either offensive or defensive purposes.

Chemical weapons are too unpredictable for military engagements because of concerns such as accidentally harming civilians or friendly forces. They cause long term contamination and the area of contamination can be affected by factors such as the weather. Their value as a weapon of deterrence was also lost. Military targets are capable of protecting themselves from chemical weapons and the experiences of the US in the Gulf War made the US confident in its ability to retaliate conventionally to chemical weapons use.[20] While the drafters of the CWC were concerned about intrastate and interstates conflict, they were not prepared for smaller scale uses of chemical weapons for terror or assassination. The impact

[19] Bernauer, Thomas. *The Projected Chemical Weapons Convention: A Guide to the Negotiations in the Conference on Disarmament*. New York: United Nations, 1990. 12, 15

[20] The Senate Committee on Foreign Relations. *Chemical Weapons Convention: Hearings before the Committee on Foreign Relations, United States Senate, 103rd Congress, 2d Session, March 22, April 13, May 13 and 17, June 9 and 23, 1994*. Washington, D.C.: USGPO., 1994. 51

of this will be demonstrated when this paper describes the weakness of the CWC's verification regime.

The decision to include the prohibition on stockpiling or developing chemical weapons as part of the norm against chemical weapons was also significant. States that had stockpiles began to see them as a detriment. The degradation of existing US and Russian stockpiles made most stockpiled chemical weapons impossible to deploy and hazardous to keep.[21] Finally, there were growing concerns about the proliferation of chemical weapons which contributed to the desire to have a verifiable means of stopping that proliferation. Acknowledging the difficulty of prohibiting chemical weapons stockpiling and development, states agreed on the need to have a flexible and intrusive treaty and a permanent bureaucracy to oversee it.

4. The Structure of the OPCW

The Organization for the Prohibition of Chemical Weapons is the implementing body of the CWC and it was established under Article VIII of the convention. It exists to achieve the object and purpose of the convention, to ensure the implementation of its provisions, and to provide a forum for consultation and cooperation among States Parties." All states who are part of the convention are automatically part of the OPCW and their membership cannot be revoked. The OPCW consists of three organs: The Conference of States Parties, The Executive Council, and The Technical Secretariat.[22]

[21] Ibid 52
[22] "Article VIII – The Organization." OPCW. https://www.opcw.org/chemical-weapons-convention/articles/article-viii-organization.

The Technical Secretariat manages the day to day functions of the OPCW and serves as a repository of convention related knowledge and experience. The Technical Secretariat is managed by the Director-General and is divided into five divisions. The Verification Division, the Inspectorate Division, the External Relations Division, the International Cooperation and Assistance Division, and the Administration Division. It also has two subsidiary bodies: The Scientific Advisory Board and the Advisory Board on Education and Outreach. The Technical Secretariat has a staff of roughly 500. [23]

The Technical Secretariat drafts the OPCW's annual budget and program. It communicates with and assists States Parties with their responsibilities under the convention. Responsibilities such as making declarations or implementing the CWC into national law. It conducts routine and non-routine verification activities. It ensures the confidentiality of information submitted by States Parties or gathered from States Parties through inspections. It tries to keep up to date with the latest scientific developments that may impact the convention. It also spreads awareness of the convention and related knowledge such as by promoting best practices for chemical safety or how to respond to chemical incidents.[24]

The Executive Council consists of 41 members who rotate every two years. Members are selected by region. Nine seats are reserved for African States Parties, nine for Asian States Parties, five for Eastern European States Parties, seven are reserved for Latin American and Caribbean States Parties, Ten for Western European and Other States Parties and One

[23] *The Structure of the OCPW*. Fact Sheet 3. OPCW. The Hague, 2017. https://www.opcw.org/sites/default/files/documents/Fact_Sheets/English/Fact_Sheet_3_-_OPCW_Structure.pdf
[24] "Article VIII – The Organization." OPCW. https://www.opcw.org/chemical-weapons-convention/articles/article-viii-organization.
"Technical Secretariat." OPCW. https://www.opcw.org/about-us/technical-secretariat.

additional seat rotates between Asian and Latin American and Caribbean States Parties.[25] Reserving seats by region was a measure taken by negotiators to ensure that at least some states with advanced chemical industries would have a seat on the Executive Council. This was a concern because, at the time of negotiations, states with advanced chemical industries were significantly outnumbered by states with weak or no chemical industries.[26]

The Executive Council is the primary deliberative body of the OPCW and it oversees the work of the Technical Secretariat. It has three meetings a year and can have special meetings if required. After receiving the draft budget and annual report from the Technical Secretariat, it can decide on if it should submit those reports to the Conference of States Parties. The Executive Council nominates who should fill the role of the Director-General. The Executive Council drafts the agenda for the Conference of States Parties. The Executive Council is the main forum where concerns over non-compliance are addressed through deliberation, through the overseeing of the Technical Secretariat's investigations of non-compliance, and through deciding on enforcement action. The Executive Council is also responsible for interacting with individual States Parties on agreements related to assistance and protection, approving agreements between the Technical Secretariat and individual states.[27]

The Conference of States Parties is the primary organ of the CWC. Every state is a member of the Conference of States Parties. States Parties are divided into the same regional blocks as the Executive Council to allow for the promotion of regional interests and

[25] The Senate Committee on Foreign Relations. *Chemical Weapons Convention: Hearings before the Committee on Foreign Relations, United States Senate, 103rd Congress, 2d Session, March 22, April 13, May 13 and 17, June 9 and 23, 1994.* Washington, D.C.: USGPO., 1994. 30

[26] Ibid

[27] "Executive Council." OPCW. https://www.opcw.org/about-us/executive-council.

strategies. It meets once a year unless a special session is called. It also meets every five years for a review conference that assesses medium to long term progress on the objectives of the treaty and medium to long term strategy for carrying out those objectives. The Conference of States Parties oversees the activities of the Executive Council and the Technical Secretariat. In addition to being a broader forum for deliberation than the Executive Council, it also has responsibilities such as approving the annual budget, annual report, and the appointment of the Director-General and making decisions on how the Technical Secretariat carries out its routine inspection activities.[28]

[28] "Conference of the States Parties." OPCW. https://www.opcw.org/about-us/conference-states-parties.

CHAPTER 2

DISARMAMENT

While the OPCW is responsible for a broad range of objectives under the CWC, it has, until recently, been an organization primarily focused on the destruction of declared chemical weapons stockpiles. Experts state that the focus of the international community on disarmament is, in part, due to the goal-oriented nature of disarmament. Richard Guthrie describes how disarmament has both unambiguous and measurable objectives that are laid out within the treaty. Other treaty objectives, such as the promotion of peaceful cooperation in chemistry, are ill-defined, or, like verification, are bogged down by political considerations.[29] The responsibilities for disarmament may also be better laid out in the convention because the convention was negotiated in a Cold War security environment that emphasized disarmament.

From when the treaty entered force in 1997, countries had a ten-year deadline to complete the destruction of their chemical weapons stockpiles with a 5-year extension available to states if it was considered necessary. States Parties had an obligation to not just destroy their chemical weapons but to destroy chemical weapons-producing facilities or, with permission, to convert them into peaceful chemical facilities. Since the treaty has entered into force, eight states parties have declared chemical weapons programs: Albania, India, Iraq,

[29] Richard Guthrie, "Post Destruction Era Compliance under the CWC" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 29

Libya, South Korea, Russia, The United States, and Syria. [30] Of the 72,304 metric tonnes of chemical weapons declared, 69,987 have been destroyed.[31]

The focus on chemical weapons disarmament has many political roots, but it has deserved the urgency it has received. Paul Walker describes how when the United States visited the Russian chemical weapons stockpile in Schuch'ye in 1994, as part of a confidence-building measure, it realized how insecure some of Russia's chemical weapons stockpiles were. Schuch'ye had weak physical security and contained artillery shells and missile warheads filled with chemical weapons that were easily transportable. It was also near the Kazakh border. This was an early demonstration that the theft of chemical weapons by non-state actors was a serious concern.[32]

Non-state actors have stolen, or have come close to stealing, chemical weapons in Iraq, Syria, and Libya. During the Iraq War, Al-Qaeda used the Iraqi government's abandoned chemical weapons as improvised explosive devices.[33] While IS controlled Iraqi territory, it had control over sealed bunkers containing chemical weapons. However, the Iraqi government has declared that the bunkers were not breached.[34] In 2016, Libya's facility that contained its last chemical weapons precursors was attacked by IS. This resulted in an international intervention by the OPCW, at the Libyan government's request, to take the

[30] Paul F. Walker, "A Century of Chemical Weapons: Building a world free of Chemical weapons." In *One Hundred Years of Chemical Warfare: Research, Deployment, Consequences*. Berlin: Springer, 2017. 384
[31] "OPCW by the Numbers." OPCW. https://www.opcw.org/media-centre/opcw-numbers.
[32] Paul F. Walker, "A Century of Chemical Weapons: Building a world free of Chemical weapons." In *One Hundred Years of Chemical Warfare: Research, Deployment, Consequences*. Berlin: Springer, 2017. 384
[33] Chivers, C. J. "The Secret Casualties of Iraq's Abandoned Chemical Weapons." The New York Times. October 15, 2014.
[34] Strack, Columb. "The Evolution of the Islamic State's Chemical Weapons Efforts." *CTC Sentinel* 10, no. 9, October 2017.

extraordinary measure of transferring the precursors out of Libyan territory and having the international community complete their destruction.[35]

The use of chemical weapons by the Syrian government against its population has also demonstrated the danger of failing to destroy chemical weapons stockpiles. In 2016, the OPCW announced the destruction of Syria's declared chemical weapons stockpile complete. However, the OPCW was aware of the incompleteness and inaccuracy of the Syrian government's chemical weapons declaration prior to that announcement. A fact made even more clear by the Syrian government's continued use of chemical weapons after it. The OPCW has continued to work with the Syrian government through its Declaration Assessment Team to get a complete and accurate declaration.[36] Reasons for the OPCW's failure to more aggressively pursue a full Syrian declaration and reasons for its failure to punish the Syrian government for its refusal to adhere to CWC provisions will be explored later in this paper.

Together, Russia and the US's stockpiles made up 95% of all declared chemical weapons stockpiles. The Russian and US's stockpiles were 40,000 tonnes and 28,577 tonnes respectively. Both states' disarmament programs were hindered early on by grassroots movements who feared the environmental and public health effects from the chemical weapons destruction programs.[37] The size of the stockpiles and the delays caused by political and technical issues resulted in the failure of the US and Russia to meet the extended

[35] Ryan, Missy, and Greg Jaffe. "As ISIS Closed In, a Race to Remove Chemical-weapon Precursors in Libya." The Washington Post. September 13, 2016.
[36] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017. 35
[37] Paul F. Walker, "A Century of Chemical Weapons: Building a world free of Chemical weapons." In *One Hundred Years of Chemical Warfare: Research, Deployment, Consequences*. Berlin: Springer, 2017. 384-387

2012 destruction deadline. Jean Pascal Zanders states that the original drafters of the convention would have seen this as a grave breach of the treaty, but he states that transparency and cooperation with the international community has resulted in their being little fallout from missing the deadline.[38] Russia completed the destruction of its declared chemical weapons in 2017 and the US expects to meet its new 2023 destruction deadline.[39]

The post-destruction era marks a shift in the OPCW's priorities. Not an end to the objective of chemical weapons disarmament. Because the convention isn't universal yet, there are still states not party to the convention who either are confirmed to have chemical weapons, like North Korea or are suspected of having chemical weapons like Israel. North Korea has retained its chemical weapons capability so that it can deter military action against it. The fact that the city of Seoul is within range of North Korea's chemical artillery and rockets makes this a potent threat. For Egypt and Israel, the issue is more political. According to Jean Pascal Zanders, Egypt has tied its chemical weapons disarmament to Israel's WMD disarmament. Zanders states that Israel, for its part, has had internal debates about chemical weapons disarmament but those in power in Israel see too much tension in the region to pursue any sort of disarmament.[40] Egypt, Israel, and North Korea's failure to become party to the CWC is part of a long-standing debate about the role of disarmament in resolving

[38] Jean Pascal Zanders "The CWC Ten Years Ahead: What is at Stake?" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 5

[39] Sanders-Zakre, Alicia. "Russia Destroys Last Chemical Weapons." Arms Control Association. November 2017.
[40] Jean Pascal Zanders, "Chemical Warfare at 100." You Tube. November 11, 2015. https://www.youtube.com/watch?v=1BZULTdVtbE.

international tensions. Some argue that disarmament is a step towards peace, and others argue that peace is a precondition to disarmament.

There is also still the issue of undeclared stockpiles of chemical weapons. In 2011, following the death of Gadhafi, the Libyan government declared that it had lied in its declaration and had hidden three tonnes of mustard gas. Which it finally destroyed in 2015.[41] The use of Novichok by the Russian government in the UK means that it has a confirmed undeclared stockpile of chemical weapons. As already stated, the Syrian government filled out a false declaration and still has chemical weapons. Finally, US intelligence has also long suspected that the Iranian government could be hiding a chemical weapons stockpile.[42]

[41] Paul F. Walker, "A Century of Chemical Weapons: Building a world free of Chemical weapons." In *One Hundred Years of Chemical Warfare: Research, Deployment, Consequences*. Berlin: Springer, 2017. 389

[42] "Compliance With the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction Condition 10(C) Report." U.S. Department of State. March 2017. https://www.state.gov/t/avc/rls/rpt/2017/270367.htm.

CHAPTER 3

VERIFICATION

In the 1994 Senate Foreign Relations Committee hearing on the CWC, Michael Moodie, then President of the Chemical and Biological Arms Control Institute, described the state level process for the weaponization of chemical weapons for military use. That process is research, development, production, agent storage, filling munitions, incorporation into offensive military doctrine, and training. While there can be many variants of this process depending on the actor and the intent of an actor, it's still useful to understand that chemical weaponization is a process. It's also useful to understand that some sections of the development chain, such as production or training, are easier to detect than others, such as research. However, as Moodie points out, even the harder to detect sections of the chain add on to, what he describes as, the mosaic of information that can be used to assess a state's compliance with the treaty.[43]

What separates the CWC from other arms treaties is its extensive verification regime. The OPCW conducts routine inspections of sensitive chemical facilities, allows states to conduct challenge inspections of facilities suspected of violating the treaty, and can investigate allegations of chemical weapons use. The OPCW's verification measures were not intended to be the sole sources used to verify compliance but are instead intended to be used in combination with other sources such as state intelligence or the work of other international

[43] The Senate Committee on Foreign Relations. *Chemical Weapons Convention: Hearings before the Committee on Foreign Relations, United States Senate, 103rd Congress, 2d Session, March 22, April 13, May 13 and 17, June 9 and 23, 1994*. Washington, D.C.: USGPO., 1994. 103

organizations. Different information sources have different advantages and disadvantages in being used to assess compliance with the convention.

Despite the extensive verification regime, the CWC has often been described as unverifiable because of the size of the global chemical industry, the dual-use nature of chemicals and related technology, as well as the low barrier to chemical weapons knowledge and resources. However, states do not judge a treaty's verifiability by assessing if every aspect of the treaty can be fully upheld. According to Amy Woolf, states tie a treaty's verifiability to if they can detect and act on a treaty violation that threatens their interests.[44] Those interests have changed with time.

According to Ralf Trapp, in the US in the 1970s, a treaty was considered verifiable if potential violations did not affect the balance of power between the East and the West. In the context of chemical weapons, it was believed that Eastern forces would have to illicitly produce thousands of tonnes of chemical weapons for a violation of the, then being negotiated, CWC to be considered significant. Trapp states that after chemical weapons use in the Iran-Iraq war, and amidst broader chemical weapons proliferation in the 1980s, the illicit production and trade of fifty to several hundred tonnes of chemical weapons was considered harmful to the interests of states. This is the amount the CWC's verification regime was supposed to detect according to Trapp. After 9/11, Trapp states that several

[44] Woolf, Amy F. *Monitoring and Verification in Arms Control*. Report. Congressional Research Service. 2011. https://fas.org/sgp/crs/nuke/R41201.pdf 8

tonnes to a kg of chemical weapons has been considered capable of having a significant political impact.[45]

While Trapp is accurate in stating that changes in the security environment have increased the perceived importance of smaller scale violations of the CWC, and thus the perceived viability of the CWC, he overgeneralizes in his focus on tonnage. In the 1994 Senate Foreign Relations Committee hearing on the CWC, then acting Joint Chief of Staff, General John Shalikashvili argued that judging the significance of a violation was much more ambiguous and context-dependent. Factors such as the purpose of the chemical weapons attack, a target's level of preparation, or the way a chemical weapon is being deployed can matter much more than the quantity of chemical weapons being used. The example he used is that during the Gulf War, the mere possibility of chemical weapons use by the Iraqi government had a political impact and affected military operations. He also pointed to the fact it would take few chemical weapons to terrorize a civilian population.[46] Something already demonstrated by then in the chemical weapons attack on the Kurdish population in Halabja by the Iraqi Government in 1988.

The strength of the verification regime had to be balanced against several competing interests. According to US Ambassador to the Conference on Disarmament Stephen Ledogar, a primary US objective in negotiations for the verification regime was to ensure

[45] Ralf Trapp, "Research, development and production: impact and challenges for future" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 16

[46] The Senate Committee on Foreign Relations. *Chemical Weapons Convention: Hearings before the Committee on Foreign Relations, United States Senate, 103rd Congress, 2d Session, March 22, April 13, May 13 and 17, June 9 and 23, 1994*. Washington, D.C.: USGPO., 1994. 157

that the regime did not affect the ability to protect national security and proprietary information from accidental disclosure or theft. He stated that the US and other states with emerging chemical industries wanted to prevent the OPCW from becoming a costly and large bureaucracy.[47] States Parties with an emerging chemical industry were concerned about the equality of the verification regime. States with fewer chemical facilities could have a greater percentage of their facilities inspected than states with a larger chemical industry.[48] There was also a concern among state parties about impeding the peaceful trade in chemicals. These interests resulted in many of the limitations of the current verification regime. Many of these interests have not changed despite growing concerns about chemical weapons proliferation and use. In the following section, the paper will review how well the verification regime has been balanced against these interests and changes that may need to be made to the implementation of the verification regime to account for current verification concerns.

1. Routine Inspections

The inspection regime is covered under Article VI of the convention and it divides responsibilities between States Parties' and the OPCW's Technical Secretariat. The inspection regime is a system of inspections that verify the accuracy of State Parties' declarations about their chemical facilities and the use of scheduled chemicals in those facilities. Chemical facilities within states party to the CWC are obligated to report any amount of schedule one chemicals they are using and the amount of schedule 2 and 3

[47] Ibid 30
[48] *Three Types of Inspections*. The Netherlands: Organisation for the Prohibition of Chemical Weapons, 2014. https://www.opcw.org/sites/default/files/documents/Fact_Sheets/Fact_Sheet_5_-_Inspections.pdf

chemicals they are using over a certain amount. They are also obligated to report on the equipment they possess. The information collected by States Parties' is sent to the OPCW's Technical Secretariat. The OPCW assigns inspectors to facilities based on that information.[49]

The CWC's schedule system balances the risk that a chemical might be used to make toxic chemicals with their peaceful uses. Toxic chemicals and precursors that have little peaceful utility are schedule 1 chemicals. Toxic chemicals and precursors that are commonly used for peaceful purposes may be placed in schedule 3 or even not scheduled.

The Technical Secretariat inspects all facilities using schedule 1 chemicals between once and twice a year. All facilities using Schedule 2 chemicals are inspected at least once but are the frequency of their inspections after that depend on the risk they pose to the purposes of the convention. Facilities that use Schedule 3 chemicals and other chemical producing facilities (OCPFs) are randomly selected for inspection.[50] OCPFs are chemical facilities that don't use scheduled chemicals but are capable of chemical weapons production.[51] To address the concern of that States Parties would be inspected to different degrees depending on how many chemical facilities they have, the OPCW inspects no more than 3 + 5%, or 20 if that is a lower number, facilities a year within a state. It also tries to ensure its inspections are evenly spread out geographically.[52]After negotiating access to facilities with states, to allow

[49] Ibid
[50] *Three Types of Inspections*. The Netherlands: Organisation for the Prohibition of Chemical Weapons, 2014. https://www.opcw.org/sites/default/files/documents/Fact_Sheets/Fact_Sheet_5_-_Inspections.pdf
[51] *Three Types of Inspections*. The Netherlands: Organisation for the Prohibition of Chemical Weapons, 2014. https://www.opcw.org/sites/default/files/documents/Fact_Sheets/Fact_Sheet_5_-_Inspections.pdf
[52] *Ibid*

states to follow domestic legal procedures and to determine how much access to a facility is necessary, the OPCW deploys inspectors.[53]

The inspection regime, as it is now, verifies the accuracy of declarations. It does not more holistically verify compliance with the treaty and it is not investigative. Unless authorized by the State Party being investigated, the inspector's tools only have the capability of detecting the presence of scheduled chemicals. While inspectors take some onsite measures to ensure that scheduled chemicals are not being used for illicit purposes by a facility, through measures such as interviews with staff, it is not required that a facility be completely accountable for how its scheduled chemicals are being used. This raises concerns about the possibility of chemicals being diverted elsewhere for chemical weapons production, for example, according to Ralf Trapp.[54]

The Select Committee on Intelligence's 1994 report on the CWC stated that there was a concern during negotiations that not focusing on the large-scale use of scheduled chemicals by a facility would result in too many facilities qualifying for inspection. Hurting the ability to focus on facilities that presented the greatest risk for violations of military significance. However, the committee noted that chemical weapons, like Novichok, could use non-scheduled chemicals and recognized that chemical weapons could be produced in small amounts to be used as a weapon of terror or to slowly stockpile.[55] The inclusion of OCPFs

[53] Senate Select Committee on Intelligence. *U.S. Capability to Monitor Compliance with the Chemical Weapons Convention: Report of the Select Committee on Intelligence, United States Senate, Together with Additional Views*. Washington: U.S. G.P.O., 1994.47

[54] Ralf Trapp, "Research, development and production: impact and challenges for future" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 22

[55] Senate Select Committee on Intelligence. *U.S. Capability to Monitor Compliance with the Chemical Weapons Convention: Report of the Select Committee on Intelligence, United States Senate, Together with Additional Views*. Washington: U.S. G.P.O., 1994. 9, 39-40

during negotiations as an inspection category has meant that the OPCW still has difficulty in routinely inspecting facilities relevant to the convention regardless of the initial efforts made by negotiators to keep the number of facilities that need to be inspected manageable.

TABLE 2: DECLARED FACILITIES BY TYPE, AS AT 31 DECEMBER 2017

Type of Facility	Declared Facilities	Facilities Subject to Inspection[15]	States Parties Having Reported Declarable Facilities[16]	States Parties With Facilities Subject to Inspection
Schedule 1	26	26	23	23
Schedule 2	496	203	34	20
Schedule 3	402	362	34	33
OCPF	4,301	4,131	80	79
Total	**5,225**	**4,722**	**80[17]**	**80[18]**

Source: *Report of the OPCW on the Implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction in 2017*. Report no. C-23/4. Conference of the States Parties, Organisation for the Prohibition of Chemical Weapons. The Hauge, 2018. 19

TABLE 3: ARTICLE VI INSPECTIONS

Number of Article VI Inspections by Year													
2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
150	162	180	200	200	208	208	209	219	229	241	241	241	241

Source: *Report of the OPCW on the Implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction in 2017*. Report no. C-23/4. Conference of the States Parties, Organisation for the Prohibition of Chemical Weapons. The Hauge, 2018. 19

Of the 241 inspections that took place in 2017, 169 were in OCPFs, 19 were in schedule 3 facilities, 42 were in schedule 2 facilities and 11 were in schedule 1 facilities. [56] With the

[56] *Report of the OPCW on the Implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction in 2017*. Report no. C-23/4. Conference of the States Parties, Organisation for the Prohibition of Chemical Weapons. The Hauge, 2018. 19

current scale of the chemical industry and its inevitable future growth, the OPCW has recognized that in the post-destruction era it needs to adopt a more targeted approach to inspections. In the OPCW's Medium-Term Plan 2017-2021 report, the OPCW has stated that it wants to take a more risk management-based approach to routine verification and to review the possibility of including more chemicals to the schedules.[57]

Ralf Trapp argues that these objectives are harder than they sound. According to Trapp, States Parties have been reluctant to add chemicals to the schedules because that would subject them to measures which would hamper their use.[58] This reluctance has been demonstrated by the fact that no chemicals have been added to the schedules until 2019 when Novichok was added after its use in Salisbury. A known chemical weapon since before the signing of the convention.[59] The registration of an estimated 15,000 new chemicals a day also means that it will difficult for the OPCW to proactively list new chemicals of potential concern according to Jean Pascal Zanders.[60]

Ralf Trapp argues that making an assessment of risk requires a firmer commitment by the OPCW on outlining what non-compliance looks like. A decision to enhance verification on a state's chemical industry due to an assessment that a state has historically been non-compliant in key areas could prove controversial, according to Trapp, due to the emphasis placed on sovereign equality by many States Parties. Trapp does endorse one suggestion

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[57] *Medium-Term Plan of the Organisation for the Prohibition of Chemical Weapons 2017-2021*. Report no. EC-83/S/1. Executive Council, Organisation for the Prohibition of Chemical Weapons. The Hauge, 2016. 4

[58] Ralf Trapp, "Research, development and production: impact and challenges for future" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 24

[59] Deutsch, Anthony. "Chemical Weapons Agency Agrees to Ban Novichok Nerve Agents." Reuters. January 14, 2019.

[60] Jean Pascal Zanders, "Chemical Warfare at 100." You Tube. November 11, 2015. https://www.youtube.com/watch?v=1BZULTdVtbE.

made by the Technical Secretariat. The Technical Secretariat has argued that the category of OCPF needs to focus less on overly specialized chemical facilities, that are hard to convert into chemical weapons facilities, and more on technologically advanced and flexible chemical facilities.[61]

Recognizing the historic preference of States to enhance the capabilities and responsibilities of states, rather than increasing the power of the Technical Secretariat, Richard Guthrie argues that declarations should more broadly cover chemicals and their use and that national authorities, who collect declaration information from chemical facilities within states, should be expected to be more aggressive in getting complete and accurate declarations. He argues that a broader dataset would be harder to falsify and would give the OPCW more opportunities to spot discrepancies.[62] However, this solution would only be effective if the OPCW shows an increased willingness act on discrepancies in declared data which it hasn't demonstrated in the case of Syria.

There are many suggestions on how to tailor the inspection regime to better detect information relevant to compliance concerns. Most focus on having a holistic and targeted inspection regime. This will be hard to achieve in the post-destruction era. The ever-growing nature of the chemical industry and national interests such as keeping the OPCW a cost-efficient and small bureaucracy are hard to overcome. The inspection regime cannot be

[61] Ralf Trapp, "Research, development and production: impact and challenges for future" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 22

[62] Richard Guthrie, "Post Destruction Era Compliance under the CWC" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 32

expected to catch violations of the treaty alone but, through changes, it can be a better resource within the narrow section of the verification regime it occupies. This would allow it to better complement other means of verification.

2. Challenge Inspections

Under Article IX of the CWC, a State Party can request that the Technical Secretariat initiate a challenge inspection of a declared or undeclared facility within another State Party if it suspects that there is a treaty violation. While the challenged state party has no right to refuse the inspection, the Executive Council can block the inspection within 12 hours if it can achieve a 3/4 majority vote to do so. 12 hours after the inspected party has been notified, inspectors from the Technical Secretariat, who are not nationals of the challenging or inspected party, can arrive in the inspected party's state. Within 36 hours of arrival, the challenged state is required to transport the inspectors to the challenged facility. Within 72 hours of arrival on site, the perimeter of the inspection is negotiated and the challenged facility can implement managed access procedures to protect irrelevant but sensitive information. Inspectors have 86 hours to inspect after managed access has been established. Within 72 hours after the end of an inspection, the Director-General of the OPCW, the challenged State Party, and challenging State Party receive a preliminary report. Within 20 days, the inspected State Party receives a more complete report and can requested changes. Within 30 days of the completion of the inspection, all State Parties receive the full report on the inspection.[63]

[63] *Three Types of Inspections*. The Netherlands: Organisation for the Prohibition of Chemical Weapons, 2014. https://www.opcw.org/sites/default/files/documents/Fact_Sheets/Fact_Sheet_5_-_Inspections.pdf

The Challenge Inspection is an OPCW mechanism that allows states to leverage information on compliance concerns from their own, or other information sources, and have the Technical Secretariat act on those concerns in a targeted way. Information collected by States Parties through their own means can be indirect, sensitive, seemingly partial or a combination of these factors. Enabling the Technical Secretariat to act on this information during a challenge inspection can allow this information to be collaborated by a direct and neutral source. Even if the evidence collected by the Technical Secretariat is not conclusive, it helps States Parties further develop gather information that can be used to make a compliance assessment and helps the verification regime to raise the likelihood that a state can be caught in a treaty violation.

The challenge inspection mechanism has raised many concerns among states. The allowance of challenge inspections virtually any time and anywhere created concerns that challenge inspections could be used frivolously as a political retaliation tool and that sensitive facilities, that are compliant with the treaty, could be subject to undue scrutiny. The CWC gives a variety of means to prevent the abuse of the challenge inspection mechanism. The first is the ability to block inspections in the Executive Council and the second is the ability of the Executive Council to have the challenging party bear the costs of the inspection if the Executive Council believes that the mechanism has been abused.[64] Managed access procedures can also help protect sensitive but irrelevant information from inspection teams. Finally, challenge inspections are exempt, by Article XV, from procedures which allow for the amending of procedures in the CWC's Annexes by the Director-General. This prevents

[64] *Ibid*

the expansion of the challenge inspection powers, keeping the balances in the mechanism originally established in the convention, without an Amendment Conference and the unanimous support of States Parties.[65]

The US has had some concerns about the mechanism. It is unclear how well a state could hide illicit activity during the period between when an investigation has been declared and when access management negotiations have concluded, it is uncertain what level of evidence will be collected by inspectors, and it is uncertain how that evidence will be presented to, and interpreted by, States Parties. The 1994 Select Committee Intelligence Report on the CWC stated that the executive branch believed that it was unlikely for inspectors to find a smoking gun but that inspectors should be able to report information like a lack of cooperation or concerning discrepancies in an investigation. Information that would be useful in contributing to a compliance judgment.[66]

A concern has been that States Parties may not accept indirect information as sufficient information to act on or, even worse, use the lack of strong evidence as a verification of a State Party's compliance with the treaty. Desiring to set their own standards for verification, States Parties from the Western bloc and Soviet bloc successfully argued in negotiations that determining compliance would not be the role of the OPCW. They argued that verification of compliance was a political, not technical, decision.[67] The OPCW was charged with merely

[65] "Article XV Amendments." Organisation for the Prohibition of Chemical Weapons. https://www.opcw.org/chemical-weapons-convention/articles/article-xv-amendments.
[66] Senate Select Committee on Intelligence. *U.S. Capability to Monitor Compliance with the Chemical Weapons Convention: Report of the Select Committee on Intelligence, United States Senate, Together with Additional Views*. Washington: U.S. G.P.O., 1994. 22-23
[67] Bernauer, Thomas. *The Projected Chemical Weapons Convention: A Guide to the Negotiations in the Conference on Disarmament*. New York: United Nations, 1990. 158

presenting information it gathers. Concern over disagreements on how inspection reports could be interpreted has not been unfounded. OPCW reports that point towards the fact that the Syrian government is responsible for using chemical weapons and joint UN and OPCW reports that directly attribute chemical weapon attacks to the Syrian government have been rejected by many States parties on the grounds that there is not enough direct evidence. This high barrier of evidence for attribution may be due to States Parties having an anti-intervention foreign policy or states having a political interest in having a state not be found responsible for violating the convention.

Despite many concerns about the challenge inspection mechanism being addressed during negations for the CWC, no country has issued a challenge inspection throughout the course of the treaty. This is, in part, because the treaty treats a challenge inspection as an extraordinary measure. This raises the political cost of calling for a challenge inspection. Section 2 of Article IX states that "States Parties should, whenever possible, first make every effort to clarify and resolve, through exchange of information and consultations among themselves, any matter which may cause doubt about compliance with this Convention, or which gives rise to concerns about a related matter which may be considered ambiguous."[68]

Marteen Lak, Dutch Ambassador to the OPCW between 2005 and 2008, said that states from the non-aligned movement have unsuccessfully tried to reinforce the idea that a challenge inspection is an extraordinary measure by calling for it to be called an option of last resort, during the second review conference, and by trying to establish binding

[68] "Article IX Consultations, Cooperation and Fact-Finding." Organisation for the Prohibition of Chemical Weapons. https://www.opcw.org/chemical-weapons-convention/articles/article-ix-consultations-cooperation-and-fact-finding.

preconditions such as making consultation between a challenging and challenged state a mandatory requirement before a challenge inspection could be issued.[69]

A concern among experts is that the longer the challenge inspection mechanism is not used, the harder it will be to use in the future. This is for political and technical reasons. The technical concern is that without the practical application of this mechanism, it's unclear if the OPCW will be able to retain the necessary resources to carry out the mechanism. This concern is in part due to the OPCW's push for making its budget more efficient according to Jean Pascal Zanders.[70] The OPCW has tried to alleviate this concern in its *Medium-Term Plan of the Organisation for the Prohibition of Chemical Weapons Report 2017-20201* report. It states that the OPCW will ensure that it keeps reserve capabilities to respond to surges in activity such as during challenge inspections, use investigations, or other contingency operations despite it striving for greater efficiency.[71]

Marteen Lak highlights how the Technical Secretariat has carried out challenge inspection exercise to prepare for possible use of the mechanism in the future. However, Lak notes that while the OPCW has trained on the technical aspects of a challenge inspection, there have not been exercises to test the political aspects of a challenge inspection such as

[69] Bernauer, Thomas. *The Projected Chemical Weapons Convention: A Guide to the Negotiations in the Conference on Disarmament*. New York: United Nations, 1990. 366, 375

[70] Jean Pascal Zanders "The CWC Ten Years Ahead: What is at Stake?" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 10

[71] *Medium-Term Plan of the Organisation for the Prohibition of Chemical Weapons 2017-2021*. Report no. EC-83/S/1. Executive Council, Organisation for the Prohibition of Chemical Weapons. The Hauge, 2016. 2

testing how the Executive Council would respond to a challenge inspection.[72] The unexpected challenges faced by the Technical Secretariat's inspectors in Syria, during their investigation of the use of chemical weapons, also demonstrates how a lack of practical experience can often not be made up for just through training. Highlighting the need for use of the mechanism to allow the Technical Secretariat to know how to retain its capacity for challenge inspections.

UNIDR (United Nations Institute for Disarmament Research) researcher Thomas Bernauer, in 1990, questioned making the challenge inspection an extraordinary measure. He pointed to how the 1986 Stockholm Agreement and the 1987 INF Treaty had succeeded in avoiding making challenge inspections a politically charged act.[73] The Stockholm Agreement achieved this through the successful and politically uncontroversial use of the challenge inspection mechanism within a year of the passage of the agreement.[74] The INF Treaty took an extra step in making challenge inspections routine by having a predetermined amount of challenge inspections a year during the first five years of the treaty.[75] As the OPCW changes its priorities to stop the re-emergence of chemical weapons, challenge inspections should become a more important mechanism. While the value of the mechanism for detecting treaty violations on its own remains unknown but suspect, it is an important mechanism for deterring treaty violations and gathering information to help with compliance judgments.

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[72] Maarten W. J. Lak. "Note on the Chemical Weapons Convention's Second Review Conference, Held at The Hague on 7–18 April 2008." Journal of Conflict and Security Law 14, no. 2 (2009). 366-367

[73] Bernauer, Thomas. *The Projected Chemical Weapons Convention: A Guide to the Negotiations in the Conference on Disarmament*. New York: United Nations, 1990. 175

[74] Cook, Don. "Stockholm Accord Permits Each Side to View Maneuvers: NATO Satisfied With Observations of East Bloc Forces." Los Angeles Times. November 07, 1987.

[75] "Chapter 7 - INF Closeout Inspections." Federation of American Scientists. https://fas.org/nuke/control/inf/infbook/ch7.html.

3. Verification of Use

In December of 2012, the international community was faced with its first allegations of chemical weapons use by a state since the signing of the CWC. The fact that the attack took place in the territory of a state who had not acceded to the convention meant that it was a violation of the 1925 Geneva Protocol, not the CWC, and that the United Nations (UN) had to lead the international investigation into the incident. The OPCW does not have the authority to lead an investigation in a non-State Parties' territory but it can put its resources at the disposal of the UN Secretary-General under part XI of the Verification Annex.[76] This was the beginning of a relationship between the OPCW and UN that would shape how inspections into chemical weapons use would be carried out in the post-destruction era and would raise questions about how the OPCW makes decisions.

The UN's authority to investigate chemical weapons use has been established since the 1980s. Thomas Bernauer has written about how the UN gained that authority. In the early 1980s there were allegations that chemical weapons were used in South East Asia by the USSR and the Vietnamese government respectively. This was a perceived breach of the 1925 Geneva Protocol. Following a UN General Assembly (UNGA) vote, the UN set up a Fact Finding Mission (FFM) to investigate the allegations. The FFM could not reach the sties of alleged use but it interviewed victims and took samples. The lateness of the investigation made it hard for the investigators to make any conclusive finding. While modern experts do not believe that chemical weapons were used in South East Asia, Bernauer states that early

[76] "Part XI Investigations in Cases of Alleged Use of Chemical Weapons." Organisation for the Prohibition of Chemical Weapons. https://www.opcw.org/chemical-weapons-convention/annexes/verification-annex/part-xi-investigations-cases-alleged-use.

investigation helped establish procedures for investigating chemical weapons use. It was learned that future chemical weapons use investigations needed to be able to rapidly deploy after an allegation and that access to a site of alleged use to gain more conclusive evidence is important.[77]

Bernauer states that in 1982 the UNGA voted against a resolution to study formalizing the ability of the UN Secretary-General to set up FFMs to investigate chemical weapons. This was rejected by Soviet and non-aligned states who argued that the UN was not a party to the 1925 Geneva Protocol, that it would affect the neutrality of the UN because of the politics of an investigation, and that empowering the UN to investigate chemical weapons could divert attention away from the CWC negotiations. According to Bernauer, the use of chemical weapons during the Iran-Iraq war was a turning point. In 1984 by a majority vote and 1987 by a unanimous vote the UNGA, in a sign of growing acceptance of the UN's role in investigating chemical weapons use, instructed the UN Secretary-General to develop human and technical resources and to establish a set of guidelines and principles to investigate chemical weapons use. In 1988 UN Security Council (UNSC) Resolution 620 formalized the role of the UN in investigating Chemical Weapons stating that it encouraged " the Secretary-General to carry out promptly investigations in response to allegations brought to his attention by any Member State concerning the possible use of chemical and

[77] Bernauer, Thomas. *The Projected Chemical Weapons Convention: A Guide to the Negotiations in the Conference on Disarmament*. New York: United Nations, 1990. 36-38
Roberts, Jacob. "The Mystery of Yellow Rain." Science History Institute. April 18, 2018. https://www.sciencehistory.org/distillations/blog/the-mystery-of-yellow-rain.

bacteriological (biological) or toxic weapons that may constitute a violation of the 1925 Geneva Protocol or other relevant rules of customary international law."[78]

The UN's FFM report in 2013 found "clear and convincing" evidence of sarin gas use which, while not being directly attributed to the Syrian government by the UN, lead to the Syrian government acceding to the CWC under the threat of US military intervention and through Russian diplomatic efforts.[79] Following Syria's accession to the CWC in 2013, chlorine gas had begun to be used as in Syria. With Syria being in the CWC, the UN did not initially have a role in verifying the chemical weapons attacks and the OPCW had its first practical experience in independently verifying the use of chemical weapons. The OPCW had established resources to carry out an investigation into chemical weapons use when it was established but it did not have a formal mechanism to initiate an inspection until the Director General of the OPCW established the FFM mechanism in 2014.[80]

The Clingendael Institute writes that the international community was in a sensitive political position when the OPCW established the FFM mechanism in 2014. The international community had to balance investigating chemical weapons attacks that the Syrian government had likely carried out while working with the Syrian government to get it to more accurately declare and destroy its chemical weapons stockpile. The OPCW's investigative team was charged with confirming chemical weapons use but prohibited from

[78] Bernauer, Thomas. *The Projected Chemical Weapons Convention: A Guide to the Negotiations in the Conference on Disarmament*. New York: United Nations, 1990. 36-38
"Resolution 620." UNSCR. http://unscr.com/en/resolutions/620.
[79] "'Clear and Convincing' Evidence of Chemical Weapons Use in Syria." United Nations News. September 16, 2013. https://news.un.org/en/story/2013/09/449052-clear-and-convincing-evidence-chemical-weapons-use-syria-un-team-reports.
[80] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017. 35-37

attribution. A decision made due to the instance of states during negotiations for the CWC that attribution was a political decision and thus outside of the scope of the OPCW. The OPCW's FFM team also couldn't access sites of alleged use due to the instability and complexity of the ongoing conflict. This forced investigators to rely on limited samples from victims and interviews.[81]

While OPCW investigators were able to verify the use of Chlorine gas in its FFM reports, the investigative team's inclusion of indirect evidence, such as witness testimony, was controversial. An influential piece of testimony was that helicopters had carried out the chemical weapons attacks. The fact that IS and rebel forces lacked helicopters made states such as the US see this as a defacto attribution of chemical weapons attacks to the Syrian government. Russia suggested that even if helicopters were present, as shown in open-source footage, that was not direct proof of their role in the attack. Russia and Brazil instead suggested that the chemical weapons could have been deployed by terrorists such as IS, who had recently been reported to have deployed chemical weapons in Iraq.[82] This excuse was already weak when presented and only grew weaker as the amount of publicly available footage and images of Syrian military helicopters deploying chemical weapons through barrel bombs grew.

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[81] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017. 35-36

[82] *Statement by H.E. Ambassador Piragibe S. Tarrago Permanent Representative of Brazil to the OPCW at the Forty-Fifth Meeting of the Executive Council*. Report no. EC-M-45/NAT.2. Executive Council, Organisation for the Prohibition of Chemical Weapons. The Hague, 2014.
Statement by the Delegation of the Russian Federation at the Forty-Fifth Meeting of the Executive Council. Report no. EC-M-45/NAT.18. Executive Council, Organisation for the Prohibition of Chemical Weapons. The Hague, 2014.
Statement by Ambassador Robert P. Mikulak United States Delegation to the Executive Council at the Forty-Fifth Meeting of the Executive Council. Report no. EC-M-45/NAT.18. Executive Council, Organisation for the Prohibition of Chemical Weapons. The Hague, 2014.

In 2015 the OPCW's Executive Council and the UNSC both formally acknowledged that chemical weapons had, for the first time in the treaty' history, been used on the territory of a State Party.[83] The severity of the finding, the continuing use of chemical weapons in Iraq and Syria, and the division of the international community on who to blame for the chemical weapons attacks in Syria made attribution by a neutral international body necessary.

Because attribution was seen as beyond the scope of the OPCW, the UN's authority to investigate chemical weapons again became relevant. The UN is explicitly a political body, which made it acceptable to states for it to make attribution judgments. In 2015 the UNSC created the UN-OPCW Joint Investigative Mission (JIM) which was tasked with investigating chemical weapons use in Syria and Iraq and attributing attacks to specific actors. The OPCW's FFM continued to operate during this time. Between 2015 and 2017 the JIM released seven reports and attributed the several attacks to the Syrian Armed Forces with some attacks being attributed to IS.

While the JIM could not directly access sites due to the ongoing conflict, the JIM based its findings on the OPCW's FFMs and a broad range of additional information. In its investigation of 9 cases of chemical weapons use in its third and fourth reports, the JIM used "more than 8,500 pages of documents, transcripts of more than 200 interviews, over 950 pieces of photographic material, more than 450 videos obtained from open sources and provided by witnesses, over 300 pages of forensic analysis and more than 3,500 files,

[83] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017. 37

including further videos, photographs and audio recordings" to reach its conclusions.[84] With the data it collected the JIM tried to establish key elements of individual cases which included establishing: "(a) date and time; (b) weather conditions; (c) impact location; (d) munition (e.g., remnants); (e) delivery method (e.g., means and direction); (f) damage and effects (e.g., on buildings, the environment, flora and fauna); and (g) medical effects." Depending on how data could be corroborated, the JIM assessed if there was overwhelming, substantial, sufficient, or insufficient data to determine the facts of a case and make an attribution judgment.[85]

With the release of these reports the fracturing of the culture of consensus begun at the OPCW. When the OPCW's Executive Council adopted the third and fourth reports of the JIM, it did so with a majority vote according to The Clingendael Institute. The Clingendael Institute writes that Russia and many non-aligned states rejected the JIM's attribution of chemical weapons attacks to the Syrian Arab Armed forces on the grounds that the JIM used indirect evidence and evidence they saw as questionable such as witnesses selected by NGOs and rebel liaisons. Some States Parties rejected the OPCW' same use of indirect information and questioned the JIMs using of the OPCW FFM reports without scrutiny.[86] The legitimacy of these complaints is suspect due to the amount and variety of the evidence collected and used by the JIM and OPCW. Since the release of the seventh JIM report in 2017, Russia has vetoed all further UNSC resolutions to extend the JIM's mandate ending its operations.

[84] *Third Report of the Organization for the Prohibition of Chemical Weapons-United Nations Joint Investigative Mechanism*. Report no. S/2016/738. Security Council, United Nations. United Nations, 2016. 6
[85] Ibid 7-8
[86] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017. 40

Following the use of a chemical weapon in Malaysia, the continued chemical weapons attacks in Syria following the ending of the JIM mechanism, and especially the chemical weapon attack in the United Kingdom, the OPCW in 2018 voted in a special session of the Conference of States Parties to allow the Technical Secretariat to make attribution judgments. This measure was only passed with a majority with 82 states supporting the measure 24 states opposing it on procedural and political grounds. Political arguments against the new mechanism are that attribution will further politicize and polarize the OPCW hurting its historic function as a consensus-based technical body and that the UNSC already has the power of attribution. While attribution does involve a degree of political action, gridlock at the UNSC caused by the Russian government has threatened the objectives of the treaty making it necessary for the OPCW to become more political. An early example of how the political struggle will impact the OPCW is the Russian government's threat to withhold its share of the funding for the attribution mechanism.[87]

After assessing its verification activities in Syria, the Technical Secretariat has placed an emphasis on broadening its capabilities to collect evidence when it can't directly access a site for inspection. The OPCW's lesson learned report calls for the technical secretariat to use more open source information.[88] The OPCW has also recognized the need to find some way to more directly collect evidence from a site in extreme circumstances and in the Open-Ended Working Group on the Future Priorities of the OPCW's 2018 report, the working

[87] "Russia Will Not Fund Establishment of OPCW Attribution Mechanism, Envoy Says." TASS. February 11, 2019. http://tass.com/politics/1044080.
[88] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017. 47

group has suggested that the OPCW utilize remote tools such as drones and satellite imagery to accomplish that task.[89]

The overlap between the OPCW's and UN's responsibilities in investigating chemical weapons use has had benefits and drawbacks. While the UN was able to independently carry out chemical weapons investigations in the 1980s with an ad-hoc team, in the JIM is was able to utilize the permanent expertise of the OPCW. Arms control expert John Hart states that the international community has been able to dual-track its engagement with Syria by being more coercive through the UN to preserve the OPCW's collaborative relationship with Syria.[90] However, the OPCW is not as easily isolated from the UN's actions as Hart and others suggest. The OPCW has had to act on the UN's political judgments which has brought political disputes into the organization. The ability for individual states to interfere with the work of the UN has resulted in many states seeing the need to increase the ability of the OPCW to act independently of the UN on this issue. Following the empowerment of the OPCW, internal divisions have deepened and the respective roles of the OPCW and UN in investigating chemical weapons use in the post-destruction era are now less clear than they were before.

[89] *Open-Ended Working Group on Future Priorities of the OPCW Recommendations to the Fourth Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention*. Report no. RC-4/WP.1. Organisation for the Prohibition of Chemical Weapons. The Hauge, 2018. 3

[90] Hart, John. "Confrontation at the OPCW: How Will the International Community Handle Syria and Skripal?" War on the Rocks. June 18, 2018. https://warontherocks.com/2018/06/confrontation-at-the-opcw-how-will-the-international-community-handle-syria-and-skripal/.

CHAPTER 4

NON-PROLIFERATION AND INTERNATIONAL COOPERATION

1. Preventing the Reemergence of Chemical Weapons

In 1994, 25 nations were suspected of having the capability to develop chemical weapons.[91] While many states remain outside of the convention or have retained chemical weapons in violation of the convention, the CWC has undoubtedly reduced the number of states with an active chemical weapons program. This is a demonstration that the CWC, from the outset, has been a successful treaty for preventing both vertical and horizontal proliferation. However, concerns of chemical terrorism and domestic state use of chemical weapons has resulted in increased pressure on shoring up the non-proliferation regime.

On the face of it, the OPCW stating that it is focusing its efforts on preventing the re-emergence of chemical weapons in the post-destruction era may seem bizarre. Chemical weapons have already been frequently used and many chemical weapons stockpiles are known, or suspected, to still exist. However, the OPCW has been careful in the selection of its language. Setting the objective as preventing reemergence is a deliberate way to sidestep the politically contentious issue of non-proliferation within the OPCW.

Richard Guthrie argues that the objective of preventing reemergence is more than political rhetoric and is actually a more accurate term. He states that in a world free of

[91] Senate Select Committee on Intelligence. *U.S. Capability to Monitor Compliance with the Chemical Weapons Convention: Report of the Select Committee on Intelligence, United States Senate, Together with Additional Views*. Washington: U.S. G.P.O., 1994. 8

chemical weapons, there would be no need to proliferate them.[92] This is inaccurate for a couple of reasons. The first is that chemical weapons precursors, technology, and knowledge are still available in a world even hypothetically free of chemical weapons. Which means there is still a proliferation threat. Additionally, it has already been demonstrated that it will be hard to know when the world will be free of chemical weapons due to the already demonstrated failures of the international community to stop the creation of chemical weapons or to detect hidden stockpiles.

During negotiations for the CWC, a challenge was incentivizing states who did not have a chemical industry, or just a weak one, to join the treaty. According to US negotiator, Stephen Ledogar, economic and technical aid were seen by developing states as the tradeoff for not pursuing chemical weapons and for accepting a broader verification regime than they wanted. [93] Despite these promises, a concern of states was that the treaty would create a situation where regulations would serve the interests of states with a developed chemical industry while hampering the ability of states without a strong chemical industry to develop one. The Australia Group was, for them, an example of this problem.

The Australia Group was created in response to the UN's report that precursors and materials that produced chemical weapons used by Iraq in the Iran-Iraq war were acquired through legal international trade. Australia responded by forming a group of states, who now

[92] Richard Guthrie, "Post Destruction Era Compliance under the CWC" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013 30

[93] The Senate Committee on Foreign Relations. *Chemical Weapons Convention: Hearings before the Committee on Foreign Relations, United States Senate, 103rd Congress, 2d Session, March 22, April 13, May 13 and 17, June 9 and 23, 1994*. Washington, D.C.: USGPO., 1994. 30

number 41 plus the EU, into an informal security arrangement to prevent the proliferation of chemical, and now biological, weapons. The Australia Group archives this through non-legally binding decisions to harmonize export controls on dual-use materials, ensuring those export controls are enforced, and to share intelligence on CBW (Chemical and Biological) threats. Many developing states decry the strict requirements for membership which they see as discriminatory. [94]

Article XI was a compromise during negations. Section 1 of the article states that:

"The provisions of this Convention shall be implemented in a manner which avoids hampering the economic or technological development of States Parties, and international cooperation in the field of chemical activities for purposes not prohibited under this Convention including the international exchange of scientific and technical information and chemicals and equipment for the production, processing or use of chemicals for purposes not prohibited under this Convention."[95]

The full article, explicitly proclaimed that international agreements that impede trade conducted for the purposes of peaceful pursuits of chemistry would be prohibited and that all states would "have the right to participate in, the fullest possible exchange of chemicals, equipment and scientific and technical information relating to the development and application of chemistry for purposes not prohibited under this Convention."[96] By joining the

[94] "The Australia Group at a Glance." Arms Control Association. https://www.armscontrol.org/factsheets/australiagroup.
[95] "Article XI Economic and Technological Development." Organisation for the Prohibition of Chemical Weapons. https://www.opcw.org/chemical-weapons-convention/articles/article-xi-economic-and-technological-development.
[96] Ibid

convention, developing states believed that all other non-proliferation arrangements relating to the chemical industry would become legally invalid.

Despite the passage of Article XI, The Australia Group argues that it is compliant with the CWC. It argues that Article VI charges states to control the trade of toxic chemicals and precursors and that Article I prohibits states from taking actions that would allow for the violation of the treaty such as allowing for others to acquire chemical weapons. It does not see fulfilling these requirements as hampering peaceful trade.[97] The US acceded to the CWC under the assumption that The Australia Group had the correct interpretation of Article XI. According to Ledogar, it wasn't just a matter of better fulfilling non-proliferation objectives but also preserving national sovereignty over trade.[98] Several states see the continued existence of exclusive export control arrangements, such as the Australia Group, as a treaty violation. A view which has politicized the OPCW's work on non-proliferation.

The Clingendael report cites academic Gary Bertsch who says that informal security arrangements and formal treaties on non-proliferation, such as the CWC, are mutually beneficial. While formal treaties have strong legitimacy that can be used to leverage action against violators, informal security arrangements are more reactive and can be used to fill gaps within formal treaties.[99]

[97] "Relationship with the Chemical Weapons Convention." The Australia Group. https://australiagroup.net/en/cwc.html. The Senate Committee on Foreign Relations. *Chemical Weapons Convention: Hearings before the Committee on Foreign Relations, United States Senate, 103rd Congress, 2d Session, March 22, April 13, May 13 and 17, June 9 and 23, 1994*. Washington, D.C.: USGPO., 1994. 29-30

[99] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017. 12

The CWC had gaps in its non-proliferation regime from the outset of the treaty. In 1994, John Holum, then director of the ACDA (Arms Control and Disarmament Agency), noted that the Australia Group was needed to limit the trade in biological agents, chemicals, and dual use technology not covered by the convention.[100] As time has passed, changes in the security environment have revealed new gaps in the CWC's non-proliferation and verification regime. The enhanced threat of chemical terrorism, proliferation networks, and weak national implementation of the CWC have been growing concerns.

The closed nature of the Australia Group makes it hard to get a complete picture of how it is responding to these threats. However, it has taken some visible steps. The Australia Group has enhanced export controls so that a state may stop exports that don't contain items on the Australia Group's control list if it suspects that items might be used for a CBW program. The Australia Group has also requested that if a member stops an export to a state, other members should not sell a similar export to the suspected state without consulting the first approached member state. Finally, the Australia Group has worked on trying to find ways to control information related to CBWs that could be used by actors seeking to acquire CBW.[101]

While the Australia Group has helped states develop a higher standard for export controls, its activities do not directly target proliferation networks. The Proliferation Security Initiative (PSI) has sought to fill this gap. The PSI was launched in 2003 by the US and it

[100] The Senate Committee on Foreign Relations. *Chemical Weapons Convention: Hearings before the Committee on Foreign Relations, United States Senate, 103rd Congress, 2d Session, March 22, April 13, May 13 and 17, June 9 and 23, 1994*. Washington, D.C.: USGPO., 1994. 188

[101] "The Australia Group at a Glance." Arms Control Association. https://www.armscontrol.org/factsheets/australiagroup.

seeks to enforce international law by interdicting exports related to WMDs in transit. Like the Australia Group participation is voluntary and more than 100 states are involved in the initiative. [102] While the activities of the PSI are also closed, there is evidence that more work is needed in disrupting the trade of chemical weapons and dual-use chemical materials. In 2018, the UN panel of experts reported the Syrian government received supplies for its chemical weapons program from the DPRK through routine shipments between 2012 to 2017.[103]

The OPCW has a mixture of direct and indirect means of carrying out non-proliferation. States not in the CWC are restricted from access to schedule 1 and schedule 2 chemicals. This was one of the CWC's primary means of enticing states to join the CWC. The OPCW's focus on chemical weapons destruction has been, in part, to limit the amount of available chemical weapons and precursors that could be vulnerable to theft. The CWC's verification system has allowed for limited tracking of the facilities and chemicals relevant to the convention. The CWC mandates that all States Parties implement the treaty into national law which includes measures that require States Parties to prevent any actors within their territory from violating the treaty. Closing areas where proliferation markets can legally operate.

According to the Clingendael Institute, in 2003 the Executive Council made national implementation a priority. The technical challenge of implementing the CWC into national law was feared to be a barrier to the accession of states to the convention and was a barrier to preventing the proliferation of chemical weapons to non-state actors. In 2004, effective laws

[102] "Proliferation Security Initiative." U.S. Department of State. https://www.state.gov/t/isn/c10390.htm.
[103] "N Korea 'providing Materials for Syria Chemical Weapons'." BBC News. February 28, 2018.

to prohibit the spread of chemical weapons to non-state actors was not just an OPCW requirement but a UN requirement under UNSC resolution 1540. The OPCW's Technical Secretariat continues to work to meet the individual needs of States Parties in fulfilling their CWC and UNSC 1540 obligations.[104]

As of 2018, of the 193 States Parties to the convention, 122 have fulfilled their implementation requirements, 33 have fulfilled some of their implementation requirements, and 38 have made no progress in national implementation.[105] In the OPCW's *Medium-Term plan 2017-2021* report, the OPCW aims to have 80% States Parties(154 States Parties) with complete implementation by 2021.[106]

Dana Sacchetti, from the Hungarian Institute for Foreign Affairs and Trade, notes that in the post-destruction era true universal national implementation should not be considered complete until there is a qualitative assessment that national implementation is being enforced.[107] That is a challenge even for wealthy states with strong bureaucracies. Between 2014 and 2017, three Belgian companies shipped 165 tonnes of isopropanol, a commonly used high-grade alcohol and Sarin precursor, to Syria without an export license in violation of European Union (EU) sanctions. The companies have argued that they took no steps to hide their shipments and that it was a failure of Belgian customs. They stated that the customs information system, that lays outlays out legal requirements, was out of date and that

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[104] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017. 8-11

[105] "OPCW by the Numbers." OPCW. https://www.opcw.org/media-centre/opcw-numbers.

[106] *Medium-Term Plan of the Organisation for the Prohibition of Chemical Weapons 2017-2021*. Report no. EC-83/S/1. Executive Council, Organisation for the Prohibition of Chemical Weapons. The Hauge, 2016. 7

[107] Sacchetti, Dana. "Chemical Warfare at 100." You Tube. November 11, 2015. https://www.youtube.com/watch?v=1BZULTdVtbE.

Belgian customs failed to inform the companies that their shipments were in violation of export controls. Belgian customs stated that it was not aware of the failure of the companies to get the proper export license until after the shipments were complete[108]

The OPCW in the *Open-Ended Working Group on the Future Priorities of the OPCW Recommendations to the Fourth Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention* report acknowledged the need for stronger export control and law enforcement regimes to tackle non-proliferation but only encouraged states to pursue them. This shows a lack of political will to more formally establish higher standards in the post-destruction era. The continuation of the politicization of the issue is also demonstrated in the report's request for a "level playing field" for export controls. A rejection of informal and exclusive export control regimes like the Australia Group. A positive development though is that OPCW has offered to assist states in the implementation of export control measures beyond minimal standards.[109]

2. The OPCW and International Cooperation for the Peaceful Pursuit of Chemistry

The OPCW's focus on means such as national implementation to achieve non-proliferation objectives is consistent with the OPCW's current culture and size. As a small, consensus-based, and primarily technical body that emphasizes state equality, the OPCW has been reluctant to use coercive means to pursue objectives such as non-proliferation or counter-terrorism. Instead, as the OPCW transitions into the post-destruction era, the OPCW

[108] Deutch, Jeff. "Belgium Illegally Shipped 96 Tonnes of Sarin Precursor to Syria." Bellingcat. April 18, 2018. https://www.bellingcat.com/news/mena/2018/04/18/belgium-illegally-shipped-96-tonnes-sarin-precursor-syria/.
[109] *Open-Ended Working Group on the Future Priorities of the OPCW Recommendations to the Fourth Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention*. Report no. RC-4/WP.1. Organisation for the Prohibition of Chemical Weapons. The Hague, 2018.2

is investing much of its efforts into utilizing its role as a global knowledge repository to contribute to tackling those issues.

In response to chemical terrorism, the OPCW has reached out to States Parties, regional bodies, Non-Governmental Organizations (NGOs), and International Organizations (IOs) to provide technical assistance. As mentioned, the OPCW has offered technical assistance to states to meet their CWC and UNSC 1540 requirements and in implementing stricter export control and law enforcement standards. Another focus of the OPCW has been chemical disaster planning.

Under Article X of the CWC, the OPCW's Technical Secretariat is charged with providing States Parties with measures on how to prepare for a chemical incident. The OPCW has a databank to offer information on best practices to protect against a chemical weapons attack which includes samples of defensive chemical weapons technology. The OPCW also has The Protection Network. A group of 20 experts, selected by States parties, to help build States Parties chemical incident response units and to train them.[110] According to the Clingendael Institute, the OPCW has partnered with States Parties, IOs, and NGOs to work with states to develop regional disaster response strategies.[111]

While it has argued that increasing chemical defense capabilities will reduce the desirability of chemical weapons for state and non-state actors, the impact of chemical

[110] *Assistance and Protection Against Attack with Chemical Weapons*. The Hague: Organisation for the Prohibition of Chemical Weapons, 2017. https://www.opcw.org/sites/default/files/documents/Fact_Sheets/English/Fact_Sheet_8_-_assistance.pdf

[111] Van Ham, Peter, Sico Van Der Meer, and Malik Ellahi. *Chemical Weapons Challenges Ahead: The Past and Future of the OPCW With a Case Study on Syria*. Report. The Clingendael Institute. 2017.

weapons use in Salisbury challenges that argument. Ten months after the use of a chemical weapon in an assassination attempt in Salisbury, local businesses reported low tourism with one reporting 60% losses in the immediate after effect of the attack and 30% losses 10 months after the attack. Businesses have had to rely on emergency funds in response.[112] There is also the cost to emergency services. Wilkshire Police alone have reported spending 7.5 million pounds to respond to the attack.[113] This demonstrates that highly targeted, and even mostly unsuccessful, chemical weapons attacks against a state prepared to respond to CBW incidents can still cause fear and impose high costs. This demonstrates why chemical weapons are an attractive weapon for terror.

The OPCW has been extending its global reach through its peaceful international cooperation efforts. The OPCW has been attempting to engage states in Latin America and Africa through efforts such as trying to establish a Designated Laboratory on those continents.[114] OPCW designated labs provide OPCW investigators a place to perform offsite analysis.[115] The OPCW has also stated that it has started considering constructing its own regional or sub-regional Centers for Excellence to create information networks to promote information relevant to the convention.[116]

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[112] Brabant, Malcolm. "After Nerve Agent Attack, This UK City Tries to Woo Back Visitors." PBS. February 11, 2019. https://www.pbs.org/newshour/show/after-nerve-agent-attack-this-uk-city-tries-to-woo-back-visitors.
[113] Initiative, Integrity. "The Social and Economic Impact of Chemical Weapons Attacks." Medium. February 15, 2019. https://medium.com/@hitthehybrid/the-social-and-economic-impact-of-chemical-weapons-attacks-aff310861942.
[114] *Open-Ended Working Group on the Future Priorities of the OPCW Recommendations to the Fourth Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention*. Report no. RC-4/WP.1. Organisation for the Prohibition of Chemical Weapons. The Hague, 2018.2 3-4
[115] "Designated Laboratories." Organisation for the Prohibition of Chemical Weapons. https://www.opcw.org/designated-laboratories-0.
[116] *Open-Ended Working Group on the Future Priorities of the OPCW Recommendations to the Fourth Special Session of the Conference of the States Parties to Review the Operation of the Chemical Weapons Convention*. Report no. RC-4/WP.1. Organisation for the Prohibition of Chemical Weapons. The Hague, 2018. 8

The OPCW has needed to become more globally focused because of changes in the geography of the chemical industry. According to Ralf Trapp, chemical industries have traditionally been concentrated in North America, Western Europe, and Japan. Over the last two decades, the chemical industry has developed in the Middle East, Asia, and Latin America as the industry has tried to bring its manufacturing facilities closer to the providers of raw materials. Africa is also expected to soon become an important continent for industrial chemical development.[117] Dutch Diplomat Marteen Lak noted that when China and India developed as chemical states, they engaged more with the OPCW on pragmatic and technical matters.[118] While an increase in the global chemical industry will provide challenges in implementing the convention in the post-destruction era, it will also increase the stake many States Parties have in the success of the treaty.

[117] Ralf Trapp, "Research, development and production: impact and challenges for future" in *The Future of the CWC in the Post-destruction Phase*. Report no. 15. European Union Institute for Security Studies. Condé-sur-Noireau: EU Institute for Security Studies, 2013. 20

[118] Maarten W. J. Lak. "Note on the Chemical Weapons Convention's Second Review Conference, Held at The Hague on 7–18 April 2008." Journal of Conflict and Security Law 14, no. 2 (2009). 377

CHAPTER 5

ENFORCEMENT

It has been asked if the norm against chemical weapons has been weakened. Jean Pascal Zanders argues that that is not necessarily the case. He argues that there is only a weakening of the norm if there is not a sufficient response to violations against the norm.[119] Despite the importance placed by experts and policymakers on enforcing the chemical weapons norm and CWC, the convention is limited in how it addresses non-compliance.

Enforcement of the convention is laid out in Article XII of the treaty. General violations, which do not rise to a level which "seriously damage the object and purposes of the convention", which have also been called technical violations, are the responsibility of the Executive Council. The Executive Council can suspend a States Party's rights and privileges, such as voting or trade rights, if violations are not dealt with in a timely fashion. [120] Violations which deal serious damage to the object and purposes of the convention are to be responded to by collective sanctions that comply with international law. Violations of "particular gravity" are to be referred to the UNGA and UNSC. [121]

While the potential response to minor violations is well laid out, Thomas Bernauer noted some of the reasons why CWC negotiators failed to reach a clearer answer on how to respond

[119] Jean Pascal Zanders, "Chemical Warfare at 100." You Tube. November 11, 2015. https://www.youtube.com/watch?v=1BZULTdVtbE.
[120] "Article XII Measures to Redress a Situation and to Ensure Compliance, including Sanctions." Organisation for the Prohibition of Chemical Weapons. https://www.opcw.org/chemical-weapons-convention/articles/article-xii-measures-redress-situation-and-ensure-compliance.
[121] Ibid

to more serious violations. During negotiations, states like the US made it clear that they wanted to be able to freely respond to violations as they saw fit. Allowing states to decide on how to coordinate sanctions gave that freedom. Beranger was also noted that without a mechanism for attribution, it was much harder to empower the OPCW to make more authoritative and collective responses. While Article XII allows the OPCW to refer violations to the UN, Bernauer says that negotiators knew from the beginning that the veto power could too easily be abused to prevent collective enforcement.[122]

The CWC empowers the OPCW to coercively make countries resolve non-compliance issues of a technical nature. However, the OPCW has sought to work with states on the reasons why they have been non-compliant. This has already been demonstrated throughout this paper. The OPCW has offered technical assistance in implement national legislation and export controls, has engaged with states to get them to more accurately and completely fill out declarations, and set reachable goals for states working towards fulfilling their destruction obligations. The OPCW has desired to not alienate states from the OPCW and to remain the primary forum where non-compliance can be resolved. This approach has produced many positive results for the organization due to the shared interest of states in fulfilling these requirements. However, the CWC should be using its more coercive mechanisms in clear cases of deliberate non-compliance, such as the Syrian government's failure to completely and accurately declare its chemical weapons or its authority will be weakened.

[122] Bernauer, Thomas. *The Projected Chemical Weapons Convention: A Guide to the Negotiations in the Conference on Disarmament*. New York: United Nations, 1990. 182

The OPCW has not had means to respond to more serious breaches of the convention. The gravest breach of the CWC has been the repeated use of chemical weapons in recent years. Issues such as the inability of the OPCW to attribute attacks and vetoes in the UN has resulted in failures in the international community's enforcement of the convention. However, the international community has attempted and continues to attempt to enforce international law restricting the use of chemical weapons. The international community's enforcement efforts have focused on two key areas: deterrence and accountability and justice.

1. Deterrence

The most visible and controversial response of the international community has been the use of military force to deter against the use of chemical weapons against civilians. In 2017, the US fired missiles at a Syrian military airfield that had been a launching point for chemical weapons attacks. In 2018, the US, in partnership with the French and British, responded to a chemical weapons attack by targeting a chemical research facility that had produced chemical weapons and two chemical weapons storage facilities.[123]

Rebecca Barber writes that while the attacks were not explicitly legal under international law, the attacks have been seen as justified by the international community. She argues that statements of support or silence by world leaders in addition to the fact that 12 of 15 states in the UNSC refused to condemn the attacks is a demonstration that the attacks were seen as

[123] Cooper, Helene, Thomas Gibbons-neff, and Ben Hubbard. "U.S., Britain and France Strike Syria Over Suspected Chemical Weapons Attack." The New York Times. April 14, 2018.

justified.[124] Barber describes the murky line between what is legal and what is justified and the consequences of straddling that line.

Barber argues that a key reason the attacks were seen as justified was because of the failure of the UN to fulfill its role in ensuring collective international security. Not just in Syria but in other major crises such as Myanmar and Yemen. The abuse of the veto in the UNSC and the failure of the UNGA to take over responsibility from the UNSC, which she argues it is entitled to do under the 1950 Uniting for Peace Resolution, has meant that collective security could only be enforced by acting outside of existing international law. Barber states that illegal but justified military force can only serve to erode the authority of the UN and the respect for international law.[125]

Monika Hakimi argues that international law is less clear cut than being simply a matter of legal or illegal. She argues that it is shaped by how states interact with it. She makes the case that since the 2018 strike resembled the 2017 strike in how they were carried out and how they were responded to, an argument can be made that the international community is moving towards a norm of accepting limited humanitarian interventions to protect civilians from chemical attacks. Hakimi agrees with Barber that the strikes were not perfectly in line with written law but she disagrees with Barber's position that the strikes were harmful to the respect for international law. She convincingly argues that accepting the ability for states to operate in a legally ambiguous way is preferable to having states stick to

[124] Barber, Rebecca. "Uniting for Peace Not Aggression: Responding to Chemical Weapons in Syria Without Breaking the Law." *Journal of Conflict and Security Law*, December 06, 2018. 7
[125] Ibid 7, 23, 35-37

the precise wording of international law and allowing international laws and principals to become irrelevant to the needs of states.[126]

While the role of military force in international law for deterring chemical weapons attacks is not settled, the effectiveness of the limited use of military force is also up for debate. The need for a strike in 2018 demonstrates that the use of limited military force in 2017 was not an effective deterrent to chemical weapons use and while there have been no further chemical weapons attacks by the Syrian government since the 2018 strike, that may be more due to the de-escalation of the war in of Syria. What hasn't been debated is that the US's threat to use force in 2012 did contribute to Syria acceding to the CWC. However, the failure to act on the initial threat to use military force against Syria if it used chemical weapons, the US's self-imposed red line, has been a wound to the norm against chemical weapons. It can be argued that it was unwise of the US to make an explicit red line to begin with, but the US's failure to uphold its threat helped create a sense that the Syrian government had used chemical weapons with impunity. This decision has been made worse with time as the Syrian government continued to act with impunity under the CWC due to failures in its enforcement. One of the most successful uses of force has been the targeted use of force to disrupt terrorist chemical weapons cells by killing or capturing chemical weapons experts and destroying chemical weapons facilities. In the Iraq War and engagements against

[126] Hakimi, Monica. "The Attack on Syria and the Contemporary Jus Ad Bellum." EJIL Talk. April 15, 2018.

IS, this has been demonstrated the ability to reduce the ability of terrorists to maintain a chemical weapons capability.[127]

While limited military force has had mixed effectiveness, the legitimacy the international community has given to the missile strikes against Syria has demonstrated the importance the international community places on the chemical weapons norm. It also demonstrates to international institutions, and particularly the UN, that if they cannot find a way to be relevant in enforcing the norm against chemical weapons, as the CWC dictates they do, they will lose their authority over protecting that norm.

2. International Justice and Accountability

Deterring chemical weapons attacks is only one part of enforcement. Another important part of enforcement is seeking justice and accountability for the use of chemical weapons. Over the course of the Syrian conflict, evidence has been collected from several sources such as the through work of international organizations such as the OPCW's FFM, and the UN's JIM, The International, Impartial and independent Mechanism to Assist in the Investigation and Prosecution of Persons Responsible for the Most Serious Crimes Under International Law Committed in the Syrian Arab Republic since March 2011 (IIM), and Independent International Commission of Inquiry on the Syrian Arab Republic. NGOs such as the Open Society Foundation's and Human Rights Watch have also collected evidence during the course of the conflict.

[127] Strack, Columb. "The Evolution of the Islamic State's Chemical Weapons Efforts." *CTC Sentinel* 10, no. 9, October 2017.

Brett Edwards and Mattia Cacciatori say that states are divided on the issue of when to pursue justice in Syria. Some states, like Russia and China, have argued that pursuing justice at this time will get in the way of efforts to establish a peace. Several Western states have argued that justice must be achieved first or else peace efforts will be jeopardized. Edwards and Cacciatori argue that while states may have political reasons for ultimately seeking or not seeking justice in Syria, this debate is reflective of a historic and sincere disagreement.[128] The impact of this debate has not just been seen in the discussions on referring Syria to the International Criminal Court (ICC) but on more immediate concerns such as the refusal of Western states to support Syrian reconstruction efforts and their refusal to ease sanctions on Syria for the purpose of reconstruction.[129]

Since Syria is not a party to the Statute of Rome, it is not automatically under the jurisdiction of the ICC. Instead, Syria must be referred to the ICC by the UNSC. Mark Kersten argues that referring war crimes and crimes against humanity to the ICC is more complicated than it sounds. He states that a referral should not be limited to individual parties, such as IS or the Syrian government, or else the ICC risks become a tool for political retribution than a mechanism for justice. The same logic also applies to referring specific crimes such as chemical weapons use. Instead, an entire conflict must be referred to the ICC and the ICC needs to be free to determine who to prosecute and for what. Kersten notes that because some actors such as IS have operated across borders and because there are a number

[128] Edwards, Brett, and Mattia Cacciatori. 2018. “The Politics of International Chemical Weapon Justice: The Case of Syria, 2011-2017.” Contemporary Security Policy 39 (2): 3-4
[129] Calamur, Krishnadev. "No One Wants to Help Bashar Al-Assad Rebuild Syria." Defense One. March 17, 2019.

of non-state and international actors involved in the conflict, its hard to know what the specific scope of a referral of the Syrian crisis actually is.[130]

With the failure of the UNSC to refer the crisis to the ICC, there has been an increased focus on preparing national courts to try any war criminals a state may apprehend. The UNGA responded by establishing the IIM. The IIM has gathered and reviewed evidence for the purpose of building case files for the use of national and, optimistically, international courts to eventually pursue war crimes. The UN Human rights Council's Independent International Commission of Inquiry on the Syrian Arab Republic has also started focusing its efforts on preparing national courts to respond to war crimes.[131]

Late justice for victims of chemical weapons is not unprecedented. In 2010, an Iraqi court tried perpetrators of the 1988 chemical weapons attack on Kurdish civilians in Halabja. The Iraqi court sentenced the aid to Saddam Hussein, Ali Hassan al-Majid, to death. A former defense minister, a former military intelligence chief, and a former regional intelligence chief were sentenced to fifteen, fifteen, and ten years in prison respectively for their role in the attack.[132] If justice for chemical weapons attacks in Syria does take years or even decades, the evidence collected by international organizations and NGOs will play an important role in helping provide that justice. In Iraq, the judicial process is already ongoing with one Iraqi

[130] Kersten, Mark. "The ICC and ISIS: Be Careful What You Wish For." Justice in Conflict. June 11, 2015.

[131] Edwards, Brett, and Mattia Cacciatori. 2018. "The Politics of International Chemical Weapon Justice: The Case of Syria, 2011-2017." Contemporary Security Policy 39 (2): 8-9, 11

[132] Bakri, Nada. "Top Hussein Aide Gets Fourth Death Sentence." The New York Times. January 17, 2010.

scientist, Suleiman al-Afari, currently on death row in a Kurdish facility for his work on IS's chemical weapons program.[133]

With the current failures to achieve justice against users and enablers of chemical weapons, states have turned to sanctions and other diplomatic means as a short-term form of justice. The French-led International Partnership Against the Impunity for the Use of Chemical Weapons is a partnership of the EU and 38 other States. While it is also working on preparing for the future prosecution of users and enablers of chemical weapons, it is in the short term and publicly naming and sanction relevant international companies and individuals.[134] In response to the chemical weapons attack on the United Kingdom, twenty, mostly NATO, countries expelled 133 Russian diplomats and intelligence officers.[135] The effectiveness of these measures for deterrence are weak but demonstrate an international struggle to find some means of justice for chemical weapons use out side of domestic and international courts.

[133] Field, Matt. "Rare Interview with Captured Scientist Raises Alarm over Islamic State Chemical Weapons Program." Bulletin of the Atomic Scientists. January 24, 2019.
[134] Chemical Weapons - No Impunity! https://www.noimpunitychemicalweapons.org/-en-.html.
[135] Fried, Daniel. "When Diplomats and Spies Must Go." Foreign Affairs. April 03, 2018.

CHAPTER 6

CONCLUSION

In 1993, negotiations on the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction concluded. The failures of the 1925 Geneva Protocol, advances in how states could respond to chemical weapons threats, the reduced value of chemical weapons to some states, and the increased proliferation of chemical weapons encouraged states to pursue a total prohibition on chemical weapons. This has been an ambitious objective. It is often hard to distinguish between peaceful and hostile chemical activity. Additionally, chemicals and related technologies are widespread and ever-evolving. Negotiators understood that for a ban on chemical weapons to be effective it had to be universal, there would need to be continuous dialog between states, there needed to be intrusive verification mechanisms, technical support, and a neutral international body capable of overseeing those needs. The neutral international body became the OPCW.

Achieving near universal agreement on an intrusive international treaty required many compromises. States with active chemical industries needed assurances that their public facilities and private chemical industries would not be disrupted more than necessary for the purposes of the conventions. This was achieved by limiting the size and scope of the OPCW. Both states with an advanced chemical industry and states without one did not want the OPCW to spiral into an expansive and powerful bureaucracy due to concerns over national sovereignty and cost. States with advanced chemical industries wanted assurances they

would have a strong voice within the OPCW despite being in the minority. States with no chemical industry or a developing chemical industry wanted equality within the treaty that they felt they lacked in other treaties such as the non-proliferation treaty. Both interests were met by dividing states into regional blocs and promoting a culture of consensus. States with no chemical industry or a weak chemical industry also needed incentives to bear the costs associated with the treaty. They were incentivized through the promise of technical and economic support as well as assurances that export controls related to the chemical industry would be limited as to not impact the peaceful pursuit of chemistry.

These compromises have had long-term effects on the implementation of the CWC. Since the CWC entered into force in 1997, the barrier to chemical weapons technology has reduced, chemical terrorism has been recognized as a more serious threat, and great power competition has reemerged. The unexpected use of chemical weapons as a means of assassination and the complicated political environment surrounding chemical weapons use in Syria and Iraq have also produced new challenges.

The OPCW's culture of consensus has meant that activities that generate the most consensus, such as chemical weapons disarmament and international cooperation on peaceful chemical pursuits, have received the most engagement. Activities that are more contentious, like non-proliferation or enforcement, have received less engagement within the OPCW. This has been demonstrated in how objectives are written in the CWC, how they are implemented, and the flexibility in which that implementation can be adapted.

An example is that culture of consensus has driven the OPCW away from coercive options available to it under the convention, such as suspending States Parties privileges or

challenge inspections, in favor of cooperative engagement. Cooperative engagement has been productive in areas where states lack the technical means to achieve responsibilities, such as national implementation requirements, but it has often been used as an excuse to avoid meaningful action in areas such as non-proliferation. It also doesn't fill the gap left by not exercising more coercive institutional capabilities and risks their degradations.

The protection of national sovereignty and the desire to keep the OPCW a small bureaucracy has hurt the ability of the OPCW to adopt a more holistic approach to enforcement. Many of the OPCW's objectives have been measured through quantitative rather than qualitative metrics. Inspections assess the accuracy of declarations rather than their completeness and national implementation is measured by its adoption rather than its enforcement. Additionally, the level of proof demanded by States Parties before they will act on grave violations of the treaty, such as in the case of chemical weapons use, exceeds what should be realistically expected. While this may be partly due to specific national interests, it is also due to concerns over national sovereignty. The failure to adopt a more holistic means of verifying the treaty is not just due to politics but the practical limitations of verifying the ever-growing global chemical industry. While the OPCW may adapt its procedures or narrow its inspection criteria, the OPCW's size will remain factor. This raises the importance of adopting a more full-spectrum approach to verification that includes the use of means such as challenge inspections.

Measures to uphold the CWC outside of the OPCW are best described as improvised and patchwork. Individual initiatives such as the Australia Group or the International Partnership Against Impunity for the Use of Chemical Weapons are reactive responses to failures of

international institutions. Their improvised nature allows their to work be more responsive to changes in what they respectively cover. This is due to a lack of formal rules governing how they should operate and their establishment by like-minded states. However, they lack the universality of the work of international organizations such as the OPCW and UN and it is unclear to what extent these individual initiatives are coordinated. As demonstrated in the missile strikes against the Syrian Chemical Weapons program, unilateral action can result in friction with more formal international implementing bodies such as the UN.

Despite concerns about the ability of the OPCW to move beyond the compromises that have defined its activities in its early years, the OPCW has taken some meaningful steps to do so. Important steps have been the weakening of the culture of consensus and the empowerment of the OPCW to make attribution judgements. This move away from compromise has shaken the organizations universal support. While there are still many gaps in the implementation of the CWC, formal and informal efforts to fill those gaps have demonstrated that the majority of the international community still supports a strong norm against chemical weapons.

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